REMARKS

Claims 1-21 are pending in the application. Claims 1-21 are rejected. The Examiner objects to claims 16, 17, and 21. The Examiner's objections and rejections are addressed below in substantially the same order as in the office action.

CLAIM OBJECTIONS

Claims 16 and 17 are objected to under 37 CFR §1.75(c) as being an improper multiple dependent claim because it refers back to two distinct features of the invention, namely, the method of claim 15 and the paraffin inhibitor composition of claim 1.

Claims 16 and 17 have been amended to delete the reference to Claim 1. The reference to claim 1 was present to indicate the antecedent basis in Claim 15 of the paraffin inhibitor composition. It is believed that Claims 16 and 17 are now in condition for allowance in view of the Examiner's objections.

Claim 21 is objected to under 37 CFR §1.75(c), as not further limiting the subject matter of a previous claim.

Claim 21 is limiting in comparison with Claims 18 and 19. Claim 18 is to a composition of a formation fluid that has been treated to inhibit paraffin crystal growth comprising an admixture of a formation fluid and the paraffin inhibitor of Claim 1. Claim 19 is to the composition of Claim 18 wherein the formation fluid includes both the aqueous and hydrocarbon components of the formation fluid. Claim 21 is to the composition of Claim 19 wherein the formation fluid is gas condensate.

Claim 18 references ANY formation fluid. Claim 19 references a formation having at least an aqueous and a hydrocarbon components. In the subject Claim 21, the formation fluid being admixed with the invention is a very specific type of formation fluid referred to in the art as gas condensate which forms at various points in a producing well and the associated piping and apparatus. While the terms oil well and gas well are used in the art to refer to the primary type of production fluid produced by a well, it is well known in the art that oil wells that produce even heavy crude oil will produce small amounts of natural gas. Thus "any" formation fluid will include brine, natural gas, and crude oil. It follows then that having dependent claims to specific types of formation fluid after reciting the general term formation fluid is limiting and Claim 21 is in condition for allowance in view of the Examiner's objection. Please note, that the

subject claims have been amended in response to a rejection as shown below, but that these arguments are still relevant.

REJECTIONS UNDER 35 USC § 112

Claim 1 (and claims 2-21 which depend therefrom) is rejected under 35 USC §112, first paragraph, as failing to comply with the enablement requirement. It is the Examiner's position that the terms strong wax solvent and weak to moderate wax solvent do not provide adequate guidance to a person of ordinary skill in the art of to determine as to which category to classify a solvent based upon "their degree of wax solubility."

Claim 1 and the dependent claims of the present application are enabling. The subject terms are defined in the specification at paragraphs [0019] and [0020]:

> [0010] The compositions of the present invention include a first solvent selected from the weak to moderate wax solvents. For purposes of the present invention, the weak to moderate wax solvents are organic liquids in which a wax would have limited solubility such as single ring aromatic compounds that are liquid at ambient conditions. Exemplary weak to moderate wax solvents include but are not limited to benzene, toluene, xylene, ethyl benzene, propyl benzene, trimethyl benzene and mixtures thereof.
> [0011] The compositions of the present invention include a second solvent selected from the strong wax solvents. For the purposes of the present invention, the strong wax solvents are organic liquids in which waxes have comparatively greater solubility than the weak to moderate wax solvents and include but are not limited to cyclopentane, cyclohexane, carbon disulfide, decalin and mixtures thereof.

The Applicant is entitled to be his own lexicographer. It is clear from the application that the invention involves the use of a mixture of two solvents, one of which is a relatively better solvent for waxes than is the other. This is discussed and non-limiting examples are provided in the above referenced paragraphs. It would be clear to one of ordinary skill in the art that a weak to moderate wax solvent would be one in which a wax is not completely insoluble in the solvent such as those listed above in paragraph [0019]. A strong wax solvent would be a solvent in which wax had a greater solubility such as those discussed in paragraph [0020].

The Examiner notes in the office action that it is customary to list solvents based upon their polarity, but such a listing would not be useful in the present application and the applicant is not bound to abide by such conventions if the Applicant clearly states how a term is used in the application. The Applicant respectfully asserts that the claims are enabling under §112.

Claim 8 is rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is the Examiner's position that the term "modified" as used in the claims is a relative term and too vague.

The Applicant respectfully asserts that the term "modified" has a known meaning within the art and that the contents of Claim 8, now incorporated within Claim 1, are not indefinite. *Hawley's Condensed Chemical Dictionary*, defines "modification" as "a chemical reaction in which some or all of the substituent radicals of a high polymer are replaced by other chemical entities, resulting in a marked change in one or more properties of the polymer without destroying the polymer's structural integrity." A modified ethylene vinyl acetate paraffin inhibitor, LD781.36 from Exxon Chemicals, is used in Example 5. Exxon does not disclose the modification. The Applicant has verified that this inhibitor is functional with the invention and does not want a class of polymers to escape simply because the manufactures do not wish to disclose the "type" of modification. It is respectfully asserted that the Claim 1 is not indefinite due to the use of the term "modified." A copy of the relevant pages from *Hawley's* is attached.

Claims 18, and 19-21 that depend therefrom, are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 19, and 20-21 that depend therefrom, recite the limitation "includes both the aqueous and hydrocarbon components" in lines 1-2 of claim 19. There is insufficient antecedent basis for this limitation in the claim.

These claims have been amended to correct the antecedent basis issues raised by the examiner and are now in condition for allowance.

REJECTIONS UNDER 35 USC § 102

Claims 1-2, 4, 9-14 are rejected under 35 USC § 102(b) as being anticipated by Clayton, Jr. et al. (US 3,563,315). It is the Examiner's position that the '315 (Clayton) reference teaches cleaning the metal surfaces of an oil well using an amine corrosion inhibitor, carbon disulfide, and a hydrocarbon such as benzene.

The subject claims are not anticipated by the Clayton reference. One reason that the claims are not anticipated is that Clayton does not teach using a polymer having the characteristic of inhibiting paraffin crystalline growth such as is an element of Claim 1. The Clayton reference teaches using an amine salt of carboxylic acids derived from fatty materials

such as tallow. ***See***, column 1, lines 47-54; column 3, lines 31-44; and Claims 1, 3 and 4. The amine salts are clearly not the same polymers as in the newly amended claim 1. The Applicant respectfully asserts that the claims are in condition for allowance in view of the Clayton reference.

Claims 1-7 and 12-21 are rejected under 35 USC § 102(b) as being anticipated by Kallenbach et al. (US 5,536,706) as further evidenced by Maulding (US 4,076,728), White (US 4,645,585) and Blanpied et al. (US 5,847,018). It is the Examiner's position that the Kallenbach reference teaches inhibiting the deposition or precipitation of wax using a polymer and a mixture of solvents including those claimed by the Applicant. The Examiner uses the cited additional references as proof supporting his position that naptha includes decalin, cyclohexane, and cyclopentane.

Claims 1-7 and 12-21, as amended are not anticipated or obvious in view of the Kallenbach reference. The Kallenbach reference teaches using a styrene-butadiene (SB) polymer in a solvent. This reference teaches that the polymer may be used as a solution in an extensive laundry list of solvents, and mixtures thereof in the nature of Markush listing. ***See***, Claim 16. The Kallenbach reference does not teach nor suggest the advantages of the solvent combinations claimed in the present application. In fact, the only solvent combination disclosed by the Kallenbach reference is in Example II and came about by accident. In Example I, the SB polymer is prepared in cyclohexane, but is then diluted in toluene for Example II.

In marked contrast, Claim 1 of the application as now amended is limited to a group of polymers, the group not including SB random copolymers. Further, this reference does not teach that surprising aspect of the present invention, namely the synergism of combining two solvents of differing strength (ability to dissolve paraffin) to produce a solvent stronger than either component and with marked improvements to pour point depression. (***See***, present application at paragraphs [0022-24]. The Applicant respectfully asserts that the subject claims are in condition for allowance in view of the Kallenbach reference.

Claims 1-8 and 12-21 are rejected under 35 USC § 102(e) as being anticipated by Krull et al. (US 6,593,426) as further evidenced by Maulding (US 4,076,728), White (US 4,645,585) and Blanpied et al. (US 5,847,018). It is the Examiner's position that this reference

teaches using the claimed polymers in complex solvents such as naphtha and in solvent mixtures which includes both components of the solvent groups claimed by the Applicant.

The subject claims are not anticipated by the Krull reference. Claim 1 has been amended to use a "consisting essentially of" transition thus limiting the solvents to those listed and only insignificant amounts of other solvents that would not materially affect the properties of the claimed composition. Clearly, naphtha and the other complex solvents include other compounds which are outside the scope of the claims as now amended and which, if present, would materially affect the properties of the claimed composition. The Applicant respectfully asserts that the subject claims are in condition for allowance in view of the Krull reference.

REJECTIONS UNDER 35 USC § 103

Claims 9-11are rejected under 35 USC § 103(a) as being unpatentable over Krull et al. (US 6,593,426) in view of Shiraishi et al. (US 6,670,414). It is the Examiner's position that the subject claims are obvious because Shiraishi teaches dissolving an ethylene/vinyl acetate copolymer in an aromatic/acyclic hydrocarbon solvent mixture and that such a solvent enhances the the preservation stability of the copolymer resin and thus one of ordinary skill in the art would have been motivated by Shiraishi to attain paraffin inhibitor composition having enhanced preservation stability.

The subject claims are not obvious over Krull in view of Shiraishi. The first reason that the subject claims are not obvious in view of Shiraishi is that Shiraishi is not in the same art area as the present invention. This is clear! Shiraishi is abstracted as being to a binder resin composition. The background of the invention is to a binder resin for making clear coats on TPO such as are found on automobiles. The present application is to preparing compositions for use as paraffin inhibitors in the production of oil and gas. These are very different areas of art and one of ordinary skill would not be motivated to apply the art from the first area in the area of the second. While it is true that in one sense, every search an Examiner performs must be a hindsight search, this combination is clearly one of improper hindsight reconstruction. According to the USPTO web based search engine, there are over 15,000 issued patents that include the term "ethylene-vinyl acetate." In engaging in a reasonable search effort prior to the invention, how would one select a clear-coat reference out of all of these for further review? The answer would be the field of their endeavor, which in this case is the production of oil and gas. While it is clear that the Examiner is a very skilled searcher to find the Shiraishi reference,

surely one of ordinary skill in the art of preparing paraffin inhibitors would not be held to such a high standard.

The second reason that the subject claims are not obvious over Shiraishi is that the teaching of Shiraishi does not truly teach or even suggest that a solvent combination such as those of the subject claims is superior to other solvent combinations at other ratios. The examiner cites column 5, lines 22-29 of Shiraishi as teaching the superiority of the solvent system choice and superiority. This passage is more complex than that. It states that:

> For the solvent to dissolve ethylene-vinyl acetate copolymer (II), the same solvent as for carboxyl group-containing chlorinated polyolefin (I) can be used. More preferably, if using aromatic solvents such as toluene and xylene and cyclic aliphatic solvents such as cyclohexane, methylcyclohexane and ethylcyclohexane at a weight ratio of 90/10 to 60/40, the preservation stability can be improved.

The referenced section is found at column 5, lines 38-46:

> The solvents to dissolve carboxyl group-containing chlorinated polyolefin (I) may be common solvents, but the formulation of aromatic solvents such as toluene and xylene is preferable. Besides, ester solvents such as ethyl acetate and butyl acetate, ketonic solvents such as methyl ethyl ketone and methyl isobutyl ketone, aliphatic solvents such as n-hexane and heptane, cyclic aliphatic solvents such as cyclohexane, methylcyclohexane and ethylcyclohexane may be used in combination.

In short, the two sections, when read together teach that a whole laundry list can be used and that, if you are going to use a combination aromatic and cyclo-aliphatic solvents, then a ratio of 90:10 to 60:40 can be used and can improve preservation stability. This section is ambiguous in regard to what is the term "improve" relevant. For example, does this section teach that this combination is the best solvent system or does it merely mean that if the specified system is used, then the weight ratios are the best out of the ratio continuum. Also, stability has a number of different meanings. One meaning would be pour point depression, but a more common meaning, in some applications would be stability in relation to photo or oxygen degradation. Another possibility would be stable in regard to further polymerization or cross polymerization.

The cited section does not clearly teach that the mixed solvent is superior to single solvents. In view of the fact that the next "step" in the process taught in Shiraishi is incorporation into a binder resin, one of ordinary skill in the art of preparing paraffin inhibitors would not be assured of successful use in crude oil. At most, one of ordinary skill in the art

might find it obvious to try such a combination if the reference we handed to him, but he would do so with no reasonable expectation of success. It is clear in the law that obvious to try is not obviousness under §103.

The third reason that the subject claims are not obvious is that the Shiraishi reference does not teach nor suggest the synergism of the invention solvent system in regard to pour point depression. The ability to ship higher concentrations of polymer in cold weather have significant economic advantages in view of the many oil and gas reserves that located in comparatively frigid areas such as Alaska, Siberia, Canada, etc.

CONCLUSION

For all the foregoing reasons, Applicant submits that the application is in a condition for allowance. No fee is believed due for this paper. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. **02-0429 (194-28620-US)**.

Respectfully submitted,

Dated: 6/13/2006

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CERTIFICATE OF FACSIMILE TRANSMISSION

I do hereby certify that this correspondence is being transmitted via facsimile, to the Commissioner for Patents, Examiner John J. Figueroa, facsimile no. (571) 273-8300, on this 13th day of June, 2006.

Beth Pearson-Naul

Hawley's

Condensed Chemical

Dictionary

THIRTEENTH EDITION

Revised by

Richard J. Lewis, Sr.

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Mn. Symbol for manganese.

Mo. Symbol for molybdenum.

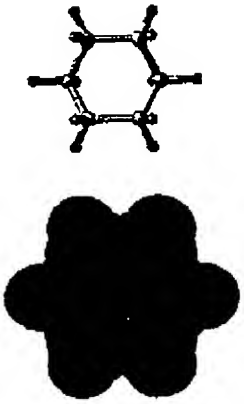
mobility. The ease with which a liquid moves or flows. Hydrocarbon liquids (nonpolar) that have low viscosity, surface tension, and density respond more readily to an applied force than does water (a polar liquid). For this reason, fires involving hydrocarbon liquids should be extinguished with foam rather than with a direct stream of water.

"Moby Dick" ***[Smith].*** TM for synthetic fatty alcohol esters.
Use: Replacements for filtered sperm whale oil.

MOCA. See 4,4'-methylenebis(2-chloroaniline).

modacrylic fiber. A manufactured fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of less than 85% but at least 35% by weight of acrylonitrile units, $-CH_2CH(CN)-$ (Federal Trade Commission). Other chemicals, such as vinyl chloride, are incorporated as modifiers. Characterized by moderate tenacity, low water absorption, and resistance to combustion; self-extinguishing.
Use: Deep pile and fleece fabrics, industrial filters, carpets, underwear, blends with other fibers.
See acrylonitrile; acrylic fiber.

model. A representation, either abstract or physical, of a system, arrangement, or structure that cannot be perceived objectively. (1) A mathematical model is one in which all or most of the parameters of a complex system such as an ocean are assigned symbolic values that can be utilized to give a theoretical approximation of actuality. Such models are useful in physical chemical analyses. (2) A space-lattice model is a three-dimensional duplication of the shape and structure of a crystal in which the atoms composing the lattice are plastic spheres or balls connected by rods to represent bonds. (3) A molecular model is similar, except that it represents an individual chemical compound rather than a crystal. The spheres are made to scale based on the known diameter of the atoms represented; they are often colored to suggest the nature of the element (black for carbon, white for hydrogen, red for halogens, etc.). In one type, both single and double bonds are plastic rods that join the spheres at appropriate angles; in another the spheres are fused in clusters. The two types are illustrated by the models of isobutane shown; a clustered model of the DNA molecule is shown in the entry on deoxyribonucleic acid. Both space-lattice and molecular models are useful for classroom demonstration.



moderator. A substance of low atomic weight, such as beryllium, carbon (graphite), deuterium (in heavy water), or ordinary water, which is capable of reducing the speed of neutrons but that has little tendency toward neutron absorption. The neutrons lose speed when they collide with the atomic nuclei of the moderator. Moderators are used in nuclear reactors, because slow neutrons are most likely to produce fission. A typical graphite-moderated reactor may contain 50 tons of uranium for 472 tons of graphite. Reactors in the U.S. are cooled and moderated with light water.

modification. A chemical reaction in which some or all of the substituent radicals of a high polymer are replaced by other chemical entities, resulting in a marked change in one or more properties of the polymer without destroying its structural identity. Cellulose, e.g., can be modified by substitution of its hydroxyl groups by carboxyl or alkyl radicals along the carbon chain. These reactions are usually not stoichiometric. Their products have many properties foreign to the original cellulose, e.g., water solubility, high viscosity, gel- and film-forming ability. Other polymeric substances that can undergo modification are rubber, starches, polyacrylonitrile, and some other synthetic resins.
See cellulose, modified.

modulus of elasticity. (elastic modulus). A coefficient of elasticity representing the ratio of stress to strain as a material is deformed under dynamic load. It is a measure of the softness or stiffness of the material (Young's modulus).

moellon degras. See degras.

mohair. A natural fiber, similar to wool, obtained from angora goats.
Properties: Tenacity 14 g/denier. Combustible.
Use: Fabrics for outer clothing, draperies, upholstery.